ANTONESCU, V.; CALINICENCO, N.; NECHITA, O.; ONU, C.; RUSU, Gh. Ilie; TOMOZEI, Cl.; TIBU, M.; VESCAN, T. T., prof.; VISCRIAN, I.

Radioactivity of the mining region Rodna Veche-Valea Vinului. Studii fiz tehn Iasi 12 no.1:31-33 '61.

1. Membru al Comitetului de redactie si redactor responsabil adjunct, "Studii si cercetari stiintifice, Fizica si stiinte tehnice" (for Vescan)

VESCAN, T. T., prof.

Erwin Schrodinger; August 12, 1887-January 4, 1961; an obituary. Studii fiz tehn Iasi 12 no.1:121-124 '61.

1. Membru al Comitetului de redactie si redactor responsabil adjunct, "Studii si cercetari stiintifice, Fizica si stiinte tehnice".

S/058/62/000/011/002/061
A062/A101

AUTHOR: Vescan, T. T.

TITLE: Remark on negative absolute temperatures

PERIODICAL: Referativnyy zhurnal, Fizika, no. 11, 1962, 22, abstract 11A247 ("Studii şi cercetări ştiinţ. Acad. RPR Fil. Ia şi Fiz. şi ştiinţe tehn.", 1961, v. 12, no. 1, 125 - 127, Rumanian)

TEXT: The necessity is emphasized of completing classical thermodynamics to take into account the possibility of negative temperatures. The condition for negative temperatures to appear in a finite thermodynamical system is that its energy is limited both at the higher and lower sides. The following is noted: 1) in accordance with the 2nd principle of thermodynamics neither -0°K nor + 0°K can be attained; 2) at the transition from negative to positive temperatures and vice-versa a chaotic state is created such that thermodynamical equilibrium is impossible and, consequently, the system has no temperature.

[Abstracter's note: Complete translation]

Card 1/1

VESCAN, Teofil T., prof.

How Lomonosov was rediscovered after a century and a half. Studii fiz tehn Iasi 12 no.2:337-338 '61.

1. Membru al Comitetului de redactie si redactor responsabil adjunct, "Studii si cercetari stiintifice, Fizica si stiinte tehnice" - Filiala Iasi.

VESCAN, Teofil T., prof.

Problem of the sources of energy. Opposing the energetic Malthusianism. Studii fiz tehn Iasi 13 no.1:81-89 '62.

1. Membru al Comitetului de redactie si redactor responsabil adjunct, "Studii si cercetari stiintifice, Fizica si stiinte tehnice" -Filiala Iasi.

VESCAN, Teofil T.

Synthetic study of the relativist or classic movement of some electric charges and of some magnetohydrodynamic waves in toroidal or cylindrical symmetry fields. Studii fiz tehn Iasi 13 no.2: 233-242 '62.

VESCAN, Teofil T.

Considerations on the theory of elementary particles. Studii fiz tehn Iasi 14 no.1:137-145 '63.

VESCAN, Teofil T. [deceased]

Present state of relativist cosmology. Studii fiz tehn Iasi 14 no.2:375-380 63.

VESCAN, Toma

Quantic relativistic oscillator. Comunicarile AR 12 no.8:901-907 Ag '62.

1. Comunicare prezentata de V. Novacu, membru corespondent al Academiei R.P.R.

VESECKY, A.

VESECKY, A. Conference of the European regional association of the World Meteorological Organization in Dubrovnik, from March 12-24, 1956. p. 65. Vol. 9, no. 3, June 1956. METEOROLOGICKE ZPRAVY. Praha, Czechoslovakia.

SOURCE: East European Accessions List (EEAL) Vol. 6, No. 4--April 1957

551.5:061.1(497.1) 551.582(497.1)

9.10-66

Petrovič, Št. and Vesecký, A., Několik poznámek o Hydrometeorologické službě F.L.R. Jugoslavie a o podnebí Jugoslavie. [A few notes on the Hydrometeorological Service of Yugoslavia and on the climate of Yugoslavia.] *Meteorologické Zprávy*, Prague, 9(5/6):152–153, 1956. DWB—The authors who visited Yugoslavia during the 2nd meeting of the WMO Regional Association for Europe, briefly describe the history of the 100 yrs old service and discuss its present organization, activities and publications. Basic climatic values for Yugoslavia are also given. *Subject Headings:* 1. Meteorological services 2. Local climatology 3. Yugoslavia.—*G.T.*

VESECKY, A.

VESECKY, A. A few notes on the hydrometeorological service in Yugoslavia and on the Yugoslav climate. p. 152. Vol. 9, no. 5/6. Dec. 1956. METEOROLOGICKE ZPRAVY. Praha, Czechoslovakia.

SOURCE: East European Accessions List (EEAL) Vol. 6, No. 4--April 1957

VESELOV, N. D.

YERMAKOV, V.S.; KLOCHKOV, I.M.; CHIZHOV, D.G.; KOGTEV, G.I.; LAVRENEN-KO, K.D.; NEKRASOV, A.M.; SPIRIN, S.A.; VESELOV, N.D.; KOTILEVSKIY, D.G.; SMIRNOV, G.V.; MARINOV, A.M.; MAKSIMOV, A.K.; IVANOV, M.I.; NEMOV, A.P.; CHUPRAKOV, N.M.; AVTONOMOV, B.V.; SYROMYATNIKOV, I.A.; MOLOKANOV, S.I.; FAERMAN, S.TS.; GORSHKOV, A.S.; GOL'DENBERG, P.S.; SOKOLOV, B.M.; MA-KUSHKIN, Ya.G.; MKHITARYAN, S.G.; RASSADNIKOV, Ye.I.; GRUDINSKIY, P.G.; FOMICHEV, G.I.; SHCHERBININ, B.V.; ZAYTSEV, V.I.; KOKOREV, S.V.; KLYU-SHIN, M.P.; PESCHANSKIY, V.I.; SAFRAZBEKYAN, G.S.; i dr...

IUrii Prokhorovich Komissarov; obituary. Elek.sta. 25 no.5:60 My '54. (Komissarov, IUrii Prokhorovich, 1910-1954) (MLRA 7:6)

VESCAN, TEOFIL T.

ROMANIA/Nuclear Physics C-4

Abs Jour : Referat Zhur - Fizika., No 5, 1957, 11132

Author : Vescan Teofil T., Sonita Georgeta

Inst : Not given

Title : Determination of the Nuclear Dimensions from the Fine Structure of the Spectral Line and From Gamma Radiation.

Orig Pub : An stiint Univ. Iasi Sec. 1, 1955, No 1-2, 185-190

Abstract : No abstract.

Card 1/1

PETROVIC, S.; VESECKY, A.

Commemorating the 60th birthday of Pavel Hrubes. *Meteor zpravy* 16 no.1:1 F '63.

PETROVIC, St.; VESECKY, A.

Towards new tasks of Czechoslovak climatology on established foundations. Meteor zpravy 15 no.3/4:54-55 Ag '62.

1. Hydrometeorologicky ustav; Pobocka Hydrometeorologickeho ustavu.

PALI, Kalman, dr.; VESEGRADY, Lajos, dr.; PEJTSIK, Bela, dr.

Diagnostic value of hysteroalpingography with special reference to water-soluble contrast media. Orv. hetil. 101 no.20:691-695 15 My '60.

1. Baranyamegyei Tanacs Korhaza, Szuleszeti, Nogyogyaszati es Rontgen Osztaly.
(HYSTEROSALPINGOGRAPHY)
(CONTRAST MEDIA)

BOHDANECKY, Jan, inz.; VESEL, Frantisek, inz.

Research on roof pressure in the Pluto Mine in the North Bohemian lignite field. Uhli 4 no.9:310-315 S '62.

1. Vyzkumny ustav pro hnede uhli, Most.

VESEL, S., inz.

Results of a systematic study in the field of domestic electrodes. Zavarivac 8 no. 1:4-12 '63.

1. Institute of Metal Constructions, Ljubljana.

VESELA, Bozena

Czechoslovak Standard 34 3395: Electric Defrosting of Water Piping. Elektrotechnik 18 no.9:274 S'63.

1. Urad pro normalizaci a mereni.

VESELA, Bozena

Bulb caps. Elektrotechnik 17 no.5:155 My '62.

VESELA, Dagmar

Dagmar Vesela, Vojtech Vitek are authors of "A Contribution to the Physical Interpretation of the Eliassen Model, which appeared in Meteorologicke Zpravy, Vol. IX, No. 3, Prague, 30 Jun 56, pp. 58-81.

VESELA, D.

VESELA, D. A contribution to the physical interpretation of the Eliassen Model. p. 78. Vol. 9, no. 3, June 1956. METEOROLOGICKE ZPRAVY. Praha, Czechoslovakia.

SOURCE: East European Accessions List (EEAL) Vol. 6, No. 4--April 1957

EXCERPTA MEDICA Sec.13 Vol.12/3 Dermato-Venereology Mar58

VESELA, E.

586. COMPLEX TREATMENT OF CANCER OF THE LOWER LIP - Dufkovský J., Veselá E. and Baláž V. Oncol. Res. Inst., Bratislava. ČSL. ONKOL. 1956, 3/3 (251-259) Tables 4

A study has been made by the authors of cases of cancer of the lower lip from 1946-1954. Treatment can either be by radiation or surgery. Radiation was used either by superficial, medium or deep X-rays, radium mould, radium needle implants or radon seeds. The authors state that surgery is being used much less now, except for glandular metastases and recurrences after irradiation. Where the gland metastases are inoperable, radiation therapy is used. Surgery of the glands may or may not be combined with surgery of the primary lesion; upper neck dissection usually suffices. Prophylactic irradiation is not generally recommended, nor is prophylactic surgical removal of glands, but opinions vary considerably. 192 cases are analysed. Most are men, and most show squamous carcinoma. Ninety-four were treated with radium, 32 with superficial irradiation. An 89% cure rate is claimed. Twenty-one had combined surgical and irradiation treatment, with an 81% cure rate. Seventeen had surgery only with 40% cure. Deep irradiation was given to 16 patients. Total survival figures are 81%.

Dawson - Northwood (IX, 5, 13, 16)

VERNAR, H.; VESELA, E.

Method of roentgenologic investigation of the esophagus and cardia.
Cesk.rentg. 9 no.1:4-16 Mar 55.

1. Krajska nemocnica tuberkulozy a Vyskumny onkologicky ustav Bratislava
(ESOPHAGUS, radiography,)
(STOMACH, radiography,
cardia)

DURKOVSKY, Juraj; VESELA, Iwa; BALAZ, Vojtech

Complex treatment of cancer of the lower lip. Cesk. onkol. 3 no.3:251-259 1956.

1. Oncolog. Res. Inst. in Bratislava, Bratislava, ul. Cs. armady 17.
(LIPS, neoplasms, ther.)

VESELA, D.

KORBELAR, J;VESELA, D;OHR, O.

Determination of phenol substances in renal diseases. Cas. lek. cesk. 89 no.32:899-901 11 Aug. 1950. (CLML 20:1)

1. Of the Second Internal Clinic of the Charles University in Prague (Head--Prof. Ant. Vancura, M. D.)

VESELA, Hana; VESELY, J.; SEIFERT, J.

Polyploid cell formation of adult mouse liver following ovarectomy. Folia biol. (Praha) 9 no.4:284-286 '63.

1. Research Institute of Pharmacy and Biochemistry, Institute of Organic Chemistry and Biochemistry Czechoslovak Academy of Sciences, Prague.
(LIVER CYTOLOGY) (CASTRATION) (DNA) (RNA)

VESELA, H.

Induction of leukemia with phosphoramide in mice of the C 57 Bl strain. Neoplasma 9 no.1:75-80 '62.

1. Forschungsinstitut fur Pharmazie und Biochemie, Prahn, CSSR.

(LEUKEMIA experimental) (PHOSPHATES toxicology)

VESELA, H.; JELINEK, V.; KEJHOVA, I.

The effect of some cancerostatics on the cytology and on the nucleic acid content in Ehrlich ascites cells in vivo. Neoplasma (Bratisl.) 12 no.4:365-372 '65.

1. Research Institute of Pharmacology and Biochemistry, Praha, Czechoslovakia. Submitted November 10, 1964.

KRYZANEK, Rudolf, promovany chemik; PRUGAR, Jaroslav, inz. CSc.; VESELA, Jana

Fast methods of determining the content of nitrogen substances in plants. Pt.2. Rost vyroba 11 no.3:317-320 Mr '65.

1. Chemical Department of the Central Research Institute of Plant Production, Prague-Ruzyne 597. Submitted December 12, 1964.

VESELA, J.

What is two-phase grain harvesting? P. 35.
ROLINICKE HLASY. (Ministerstvo zemedelstvi.
Hlavni aprava jednotnych druzstev) Praha.
Vol. 10, no. 6, June 1956.

SOURCE: EEAL LC Vol. 5, No. 10, Oct. 1956.

VESELA, M.

The use of polarography in metallurgic analysis. II. Polarographic determination of lead in antimony concentrates.
p. 389.

CHEMIA ANALITYCZNA. (Komisja Analitycana Polskie Akademii Nauk i Naczelna Organizacja Techniczna) Warszawa. Poland. Vol. 4, No. ½, 1959

Monthly list of East European Accessions (EEAI) LC, Vol. 8, No. 8, August 1959
Uncla.

L 26371-65 EWT(m)/EWP(t)/EWP(b) DIAAP/IJP(c) JD

Z/2511/61/000/001/0081/0089

ACCESSION NR: AT4049958

AUTHOR: Lehar, F. (Legar, F.) (Prague); Palechova, J. (Palechkova, Y.) (Prague); Skrivanek, J. (Skrivanek, Y.) (Prague); Skrivankova-Vesela, M. (Vesela, M.) (Prague)

19
12
B+1

TITLE: Study of gamma transitions during the inelastic scattering of neutrons

SOURCE: Prague. Ceske vysoke uceni technicke. Prace. Ser. 6, no. 1, pt. 2, 1961, 81-89

TOPIC TAGS: gamma transition, fast neutron, nuclear reaction, aluminum nitride target, deuterium charge, transition probability, ground state, metastable state, cascade diagram

ABSTRACT: Gamma radiation generated during the inelastic scattering of fast neutrons by certain elements was studied in ring geometry. The neutrons were generated from the following reactions on a UJV CSAV cascade accelerator: $D(d,n)He^3$, $N^{14}(d,n)O^{15}$, and $T(d,n)He^4$. Deuteron energies were 200-800 kev. Several types of targets were used. Neutrons of an average energy of 3.1 Mev were generated from the D + D reaction on a gaseous deuterium target, the deuterium charge being separated from the vacuum space by a 1-μ thick nickel foil. Part of the mess-

L 26371-65

ACCESSION NR: AT4049958

2

urements were made using a zirconium target with adsorbed deuterium or tritium. The $N^{14}(d,n)O^{15}$ reaction was used for energies of around 4.3 Mev, in this case with a target of pressed aluminum nitride. The gamma radiation energy was measured by a single-crystal scintillation spectrometer. The neutron flux was monitored by a scintillator detector with a scintillator from a mixture of ZnS(Ag) and paraffin. It was determined by measurement that the 1,020 kev, 1220 kev, and 1380 kev lines given in the Nuclear Data Sheets as transitions for Te^{127} are, with great probability, transitions for Te^{124} because they were detected even at the termination of radiation. From the point of view of energy it is not possible for the lines to originate from the decay of Te^{127} from the ground state or the metastable state. The 1179 and 574 kev lines are particularly significant and the most accurately measured. Wherever possible it was attempted to construct cascade diagrams. The amplitude analysis was made in several ways: by a single-channel amplitude analyzer with a range from 0 -- 10[illegible] v, by a single-[illegible]channel amplifier for low-input pulses with a range fro[illegible] without a linear amplifier, by a gray-wedge amplitude analyze[illegible], and by a hundred-channel amplifier. Orig. art. has: 9 figures.

Card 2/3

L 26371-65

ACCESSION NR: AT4049958

ASSOCIATION: Ceske vysoke uceni technicke, Prague (Higher Technical School)

SUBMITTED: 00 ENCL: 00 SUB CODE: NP

NO REF SOV: 000 OTHER: 000

Card 3/3

MACEK, Z.; VESELA, M.

Development of neurology during the recent 10 years and its present problems. Cesk. neur. 19 no.1:4-12 Mar 56.

(NEUROLOGY,
in Czech.(Cz))

VESELA, M.

A plea for a better qualified sub-professional medical personnel in Prague. Cesk. zdravot. 7 no.4:204-208 May 59.

1. Organizacne metodicke oddeleni UZM--UNV hl. m. Prahy.
(EDUCATION, MEDICAL,
in Czech., sub-professional med. personnel (Cz))

8175-3

Z/037/60/000/04/006/014
E073/E535

24.6810

AUTHORS: Skřivánek, Jiří, Veselá, Marie

TITLE: Temperature Dependence of Scintillation Detectors 19

PERIODICAL: Československý časopis pro fysiku, 1960, No 4, pp 312-315

ABSTRACT: The temperature dependence of the efficiency was measured on detectors with organic and inorganic scintillators between +5 and +40°C. The entire detector, i.e. the crystal, a type RCA 6655 photomultiplier and the pre-amplifier, were all enclosed in a thermostat with a water containing shell. The temperature was maintained with an accuracy of ± 0.5°C. In the case of NaI(Tl), the change in the efficiency was determined from the change in the position of the photoline, whilst in the case of organic scintillators it was determined from the Compton edge of the appropriate mono-energy gamma radiation. The spectra were measured by a single channel amplitude analyser, whereby the long duration stability of the spectrometer was better than 1%. The measured temperature dependence of various

Card 1/2

8175 3

Z/037/60/000/04/006/014
E073/E535

Temperature Dependence of Scintillation Detectors

detectors are graphed in Fig 1. The temperature dependence is the sum total of the temperature dependence of the crystal and of the photomultiplier. In order to separate the influence of these two components, measurements were carried out in a test-rig as shown in Fig 2; the photomultiplier and the NaI(Tl) crystal were thermally insulated and each of them was held at the desired temperature by water cooling, which was controlled by a Hoeppler thermostat. The temperature of the crystal was maintained at 21°C, whilst the temperature of the photomultiplier was made to vary. The normalized temperature coefficients of two RCA 6655 and two RCA 6342 photomultipliers are graphed in Fig 3; they are negative and almost equal in the investigated range. Fig 3c shows the temperature dependence of the NaI(Tl) crystal, it is positive and non-linear. Acknowledgments are expressed to E. Kulič for his assistance in carrying out the measurements. There are 3 figures and 3 English refs.

ASSOCIATION: ÚJV ČSAV, Prague
SUBMITTED: December 29, 1959
Card 2/2

4

VESELA, Marta, promovana geolozka; POKORNY, Josl, RNDr., nositel cestneho odznaku "Nejlepsi pracovnik geologicke sluzby"

Metallometric prospecting in basic geological mapping. Geol pruzkum 6 no. 3:81-82 Mr '64.

1. Geologicky pruzkum National Enterprise Brno, zavod Jihlava.

PTACEK, Miroslav, inz.; VESELA, Vera, inz.

Requirements on studio microphone properties. Sdel tech 12 no.5:178-181 My '64.

KLIMA, Drahoslav, inz.; BLANKA, Richard; VESELA, Vlasta

Problems of laboratory control in modern smoked meat and sausage plants. Prum potravin 15 no.9:448-453 S '64.

1. Research Institute of Meat, Brno.

ACCESSION NR: AP4046499

AUTHOR: Petru, F. (Engineer, Candidate of sciences); Popela, B. (Engineer); Krsek, J. (Engineer); Vesela, Z. (Engineer); Rubes, M.

TITLE: Gas laser for visible and infrared regions

SOURCE: Jemna mechanika a optika, no. 9, 1964, 260-275, 282

discharge tube, ... laser

... The article describes the design, characteristics and applications ...

lasers are made of ... are also given in detail. ... of their construction, including materials used, are also given in detail. This work was performed at UFT with the cooperation of R. Chudoba, J. Fajt, J. Jirusek, O. Moundry, A. Stejskal, V. Prajzner, Z. Barak, and other coworkers at the Institute whom we thank. The Electric Heating Appliance Factory in Prague,

Card 1/2

L 10600-65
ACCESSION NR: AP4046499 4

...for Development of High-Frequency Generators for Charging ... Optical Parts, and

...this work: ...

...Ustav pristro... Technicky, CSAV, Brno (Institute for Instrument... Design, CSAV)

SUBMITTED: 00 ENCL: 00 SUB CODE: EC, OP

NO REF SOV: 002 OTHER: 028

Card 2/2

L 33236-66

ACC NR: AP6023843 SOURCE CODE: CZ/0043/65/000/009/0711/0714

AUTHOR: Hrivnak, Jan--Grivnyak, Ya. (Engineer; Bratislava); Vesela, Zlatica (Engineer; Bratislava)

ORG: Research Institute for Agrochemical Technology, Bratislava (Vyskumny ustav agrochemickej technologie)

TITLE: Investigation of the chlorination of methyl acetoacetate by means of gas chromatography

SOURCE: Chemicke zvesti, no. 9, 1965, 711-714

TOPIC TAGS: gas chromatography, chlorination, chemistry technique

ABSTRACT: Chlorination of the methylester of acetoacetic acid was investigated by means of gas chromatography. The reaction mixture was analyzed in a glass column 4 mm in diameter and 1.6 m high, filled with Celite 545 (grain size 0.16-0.20 mm). The operating temperature was 130°C. The celite contained 13% of di-2-ethylhexyl sebacate and 2% of polyethylene glycol 400. The carrier gas was hydrogen. When chlorine was used for chlorination 2-chloro- and 2,2'-dichloroacetic acid methylester were formed; when sulfuryl chloride was used for the chlorination only the first product was formed. Orig. art. has: 2 figures. [JPRS]

SUB CODE: 07 / SUBM DATE: 20Jan65 / ORIG REF: 001 / SOV REF: 002

OTH REF: 010

Card 1/1

HRIVNAK, Jan; VESELA, Zlatica; SOHLER, Ervin; DRABEK, Jozef

Study on reesterification of ethyl acetoacetate by methanol with the aid of gas chromatography. Chem prum 15 no.1:7-9 Ja '65.

1. Research Institute of Agricultural Chemistry Technology, Bratislava.

HRIVNAK, Jan; HNOTOVA, Viera; VESELA, Zlatnica

Colorimetric determination of trichloromethylsulfenyl chloride in the atmosphere of the working area. Prac. lek. 16 no.8:372-373 O '64.

1. Vyskumny ustav agrochemickej technologie v Bratislave (veduci pracoviska ing. V. Batora, CSc.).

VESELAGO, A.D.

Characteristics of the hydrogeological conditions of the area of northern Sakhalin oil fields. Trudy VNIGRI no.181:195-202 '61. (MIRA 15:2)

(Sakhalin--Oil field brines)

VESELAGO, A.D.

Underground gas storage. Gaz. prom. no.6:28-31 Je '56. (MLRA 9:12)
(Gas, Natural--Storage)

16,4100

2615[5]
S/044/61/000/005/018/025
C111/C444

AUTHOR: Veselago, I. L.

TITLE: The approximation of a function of two variables by special superpositions of functions of one variable

PERIODICAL: Referativnyy zhurnal, Matematika, no. 5, 1961, 26, abstract 5V176. (Izv. Leningr. elektrotekhn. in-ta, 1959, 39, 271 - 284)

TEXT: Considered is the problem of producing electric systems which permit the realisation of various mathematical functions of two variables as a combination of functions of one variable, in the simplest way which is possible, e. g. to automatise them possibly with rather few elementary instruments. A method of approximation is described, which often permits to approximate a function of two variables by superposition of functions of one variable by aid of four elementary instruments at sufficient exactness (the error is not greater than 3 - 4 %); this method is applicable in cases where the approximations

$$f(x_i, y_j) = g(x_i) + h(y_j) \qquad (1)$$

by Silverberg and Pike produce a large error. The problem leads to a

Card 1/2

The approximation of a function... S/044/61/000/005/018/025
C111/C444

determination of functions Φ, f_1 and f_2 such that the given function $z = F(x, y)$ is representable as precisely as possible in the form:

$$z = \Phi[f_1(x) + f_2(y)] .$$

This is identical to the determination of such φ, f_1, f_2 that $\varphi(z) = f_1(z) + f_2(y)$, where $\varphi(z)$ is one-to-one. The difference between this method and the method of Silverberg and Pike consists of the facts that the decomposition (1) is not applied on the given function $z = F(x, y)$, but on the function $\varphi(z)$, which is obtained by means of the usual method by twice numerical integration of the differential equation:

$$[\ln \varphi'(z)]' = - z''_{xy}/z'_x z'_y .$$

The scheme of the calculations is described in detail. Examples are brought for the application of this method on analytic functions or functions, given by tables. The results of the calculations are put down in tables.
(Abstracter's note: Complete translation.)
Card 2/2

VESELAGO, I.L., assistent

Approximation of the function of two variables by a special type of superposition of functions of one variable. Izv. LETI 57 no.39:271-284 '59. (MIRA 15:10)
(Electronic calculating machines)
(Functions of several variables)

S/196/61/000/002/001/002
E073/E535

11,4100

AUTHOR: Veselago, I. L.

TITLE: Approximation of a Function of Two Variables by Means of a Special Type of Superposition of Functions with One Variable

PERIODICAL: Referativnyy zhurnal, elektrotekhnika i energetika, 1961, No.2, p.7, abstract no.2A47. Izv. Leningr. elektrotekhn. in-ta, 1959, 39, 271-284

TEXT: The problem is considered of representing the function of two variables as a combination of functions of one variable for the purpose of constructing el-simulation circuits with a minimum number of elementary elements. For the case when the method of Silverberg and Paykel approximation of the type

$$f(x_i, y_j) = g(x_i + h(y_j)$$

does not ensure the required accuracy, it is proposed to apply this type of approximation to the derived function $\varphi(z)$, where $\varphi(z) = f_1(x) + f_2(y)$, and not to the given function $z = F(x,y)$.

Card 1/2

Approximation of a Function of ... S/196/61/000/002/001/002
E073/E535

An example is given of approximation of the function $z = \sqrt{x^3 + y^2}$.
4 bibliographic references. (Leningradskiy elektrotekhnich.in-t, Leningrad Electrotechnical Institute).
Abstracted by N. Gol'tsov.

[Note: The above text is a full translation of the original Soviet abstract.]

Card 2/2

VESELAGO, L.I.

Determination of bi- and trivalent vanadium. Zhur. anal. khim. 20 no.3:335-338 '65. (MIRA 18:5)

1. Institut metallurgii imeni Baykova, Moskva.

VESELAGO, L.I.

Determination of lower oxides of titanium in the presence of bivalent iron [with summary in English]. Zhur.anal.khim. 12 no.3:381-385 My-Je '57. (MIRA 10:7)

1. Institut metallurgii im. A.A. Baykova AN SSSR.
(Titanium oxides)

VESELAGO, L.I.

Veselago, L.I. (Institute of Metallurgy, Academy of Sciences USSR). Determination of Bivalent and Trivalent Titanium in Slags Containing Metallic Iron and Ferrous Oxide, p. 152. Titan i yego splavy. vyp. II: Metallurgiya titana (Titanium and Its Alloys. No. 2: Metallurgy of Titanium) Moscow, Izd-vo AN SSSR, 1959. 179 p.

This collection of papers deals with sources of titanium; production of titanium dioxide, metallic titanium, and titanium sheet; slag composition; determination of titanium content in slags; and other related matters. The sources of titanium discussed are the complex sillimanite ores of the Kyakhtinskoye Deposit (Buryatskaya ASSR) and certain aluminum ores of Eastern Siberia. One paper explains the advantages of using ilmenite titanium slags for the production of titanium dioxide by the sulfuric acid method. Production of metallic titanium by thermal reduction processes (hydrogen, magnesium, and carbon reduction) is the subject of several papers, while other papers are concerned with the electrolytic production of titanium. Other subjects dealt with are interaction of titanium with water vapor and with hydrogen and the determination of titanium in slags.

VESELAGO, L. I., Cand Chem Sci -- (diss) "Determination of the lower oxides of titanium in slag in the absence of free iron and its oxides." Moscow, 1960. 15 pp; (Moscow State Univ im M. V. Lomonosov, Chemistry Faculty, Chair of Analytical Chemistry); 150 copies; price not given; printed on duplicating machine; (KL, 17-60, 141)

VESELAGO, L.I.

Use of sodium tungstate in the titrimetric determination of iron and titanium. Zhur.anal.khim. 15 no.3:321-324 My-Je '60. (MIRA 13:7)

1. A.A.Baikov Institute of Metallurgy, Academy of Sciences, U.S.S.R., Moscow.
(Sodium tungstate) (Iron--Analysis)
(Titanium--Analysis)

VESELAGO, L.I.

Determining lower titanium oxides in slags containing sulfides. (MIRA 14:10)
Trudy Inst. met. no.8:245-251 '61.
(Slags—Analysis)
(Titanium oxide—Analysis)

SOV/75-13-5-9/24

AUTHOR: Veselago, L. I.

TITLE: Determination of Bi- and Trivalent Titanium in Slags Containing Metallic and Bivalent Iron (Opredeleniye dvukh- i trekhvalentnogo titana v shlakakh, soderzhashchikh metallicheskoye i dvukhvalentnoye zhelezo)

PERIODICAL: Zhurnal analiticheskoy khimii, 1958, Vol 13, Nr 5, pp 562-566 (USSR)

ABSTRACT: In a former paper (Ref 1) the author had described a method for the determination of the sum of low titanium oxides in slags that contain bivalent iron. The author continued this study by elaborating a method which permits a separate determination of bi- and trivalent titanium in slags containing metallic and bivalent iron. The result of these investigations was that in the decomposition of the slag in ortho-phosphoric acid by boiling in a CO_2-atmosphere bivalent titanium is oxidized quantitatively to its trivalent stage which is stable under these conditions. In the titration of such a solution ferriammonium alum against potassium thiocyanate the consumption for the entire content of trivalent titanium (V_1)

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Determination of Bi- and Trivalent Titanium in Slags Containing Metallic and Bivalent Iron

can be obtained. This content consists of the trivalent titanium which has been in the slag from the very beginning and of Ti(III) which was created by oxidation of bivalent titanium in a solution of ortho-phosphoric acid. If the slag is decomposed in a mixture of hydrofluoric acid and sulfuric acid in the presence of an excess of ferriammonium alum, bivalent iron is formed in a quantity that is equivalent to the sum of the bi- and trivalent titanium present. For 1 equivalent Ti(II) two equivalents Fe(II) are formed, but only 1 equivalent Fe(II) for 1 equivalent Ti(III). The bivalent iron that is formed is titrated with a solution of $KMnO_4$ (Consumption V_2).

Since in this titration the bivalent iron originally present in the sample causes a surplus consumption, the content of bivalent iron must be established in a separate weigning of the sample. This is done in titration with a solution of ammonium vanadate against barium diphenylamine sulphonate (Consumption V_3). The percentage of TiO and Ti_2O_3 can be computed with the formulas:

Determination of Bi- and Trivalent Titanium in Slags Containing Metallic and Bivalent Iron

$$\% TiO = \frac{63,9.N(V_o - V_1)}{1000.n} 100, \quad \% Ti_2O_3 = \frac{143,8.V(2V_1 - V_o)}{2.1000.n} 100.$$

$V_o \ldots (V_2 - V_3)$; N...Normality of standard solution; n...Weight of sample.

The results obtained by this method can easily be reproduced. The accuracy of the determination amounts to 0,5 to 1 per cent (relatively) with contents of 10 to 60 per cent of titanium and to 6 per cent (relatively) with contents of 1 to 5 per cent of titanium. This accuracy is sufficient to clarify the form of presence of titanium in slags. The author expressed his gratitude to A. I. Ponomarev and B. N. Melent'yev for their assistance. In the paper the process of determination of bi- and trivalent titanium in slags according to this method is described very accurately. The metallic iron in the slag is oxidized to its bivalent stage before determination with a solution of $CuSO_4$ and is then determined by titration with ammonium vanadate. There are 5 tables and 1 reference, 1 of which is Soviet.

SOV/75-13-5-9/24

Determination of Bi- and Trivalent Titanium in Slags Containing Metallic and Bivalent Iron

ASSOCIATION: Institut metallurgi im. A. A. Baykova AN SSSR, Moskva (Institute of Metallurgy imeni A. A. Baykov, AS USSR, Moscow)

SUBMITTED: April 16, 1957

Card 4/4

VESELAGO, L.I.

Determining bivalent and trivalent titanium is slags containing metallic iron and ferrous oxide. Titan i ego splavy no.2: 152-157 '59. (MIRA 13:6)

1. Institut metallurgii AN SSSR.
(Slag--Analysis) (Titanium--Analysis)

ACCESSION NR: AI 4014224 S/0075/64/019/002/0264/0265

AUTHOR: Veselago, L. I.

TITLE: Determination of trivalent nickel in $Li_xNi_{(1-x)}O$ solid solutions

SOURCE: Zhurnal analiticheskoy khimii, v. 19, no. 2, 1964, 264-265

TOPIC TAGS: nickel, cobalt, titrimetric analysis, $Li_xNi_{(1-x)}O$ solid solution, trivalent nickel, trivalent cobalt

ABSTRACT: The titrimetric determination is based on the ability of Ni(III) to oxidize Fe(II): Ni(III) + Fe(II) = Ni(II) + Fe(III). Excess unoxidized Fe(II) is titrated with ammonium vanadate. Thus, 0.01 gm. Fe metal is dissolved under CO_2 in 25 ml. H_3PO_4 (1.7 sp. gr.); 0.1 gm. Ni(III)-containing sample is then dissolved, the solution is cooled, H_2SO_4 (50 ml, 1:4) is added, and Fe(II) is titrated with 0.01 N ammonium vanadate with a diphenylamine sodium sulfonate indicator. The method is also applicable to the determination of trivalent Co in $Li_xCo_{(1-x)}O$ solid solutions. In samples containing 2-10% trivalent Ni or Co,

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ACCESSION NR: AP4014224

these elements can be determined with an accuracy of 1-5%. Orig. art. has: 1 table and 1 formula.

ASSOCIATION: Institut metallurgii im. A. A. Baykova, Moscow (Institute of Metallurgy)

SUBMITTED: 27Apr63 DATE ACQ: 12Mar64 ENCL: 00

SUB CODE: CH, ML NO REF SOV: 000 OTHER: 002

Card 2/2

Bykovskaya V. I. VESELAGO, L.N.

L 58716-65 EWT(m)/EPF(n)-2/EPR/EWP(t)/EWP(b)/EWA(h) Pu-4/Pab/PU-4 IJP(c)
JD/WW/JG

AM5016875 BOOK EXPLOITATION UR/669:543/545+543.42

Ponomarev, A. I., ed. 60 25 B+1

Chemical and spectrum analysis in metallurgy; a practical handbook (Khimicheskiy i spektral'nyy analiz v metallurgii; prakticheskoye rukovodstvo) Moscow, Izd-vo "Nauka", 1965. 382 p. illus., tables, index. (At head of title Akademiya nauk SSSR. Gosudarstvennyy komitet po chernoy i tsvetnoy metallurgii pri Gosplane SSSR. Institut metallurgii im. A. A. Baykova) Errata slip inserted. 3000 copies printed.

TOPIC TAGS: analysis, chemical analysis, physicochemical analysis, spectral analysis, slag analysis, steel analysis, iron analysis, alloy analysis, pure metal analysis, element determination, rare earth element determination, impurity determination

PURPOSE AND COVERAGE: This book is intended for specialists and workers at scientific-research and plant laboratories. The book describes chemical, physicochemical and spectral methods of analysing slags, steels, irons, various alloys, and some pure

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metals. The determination of rare and rare-earth elements is outlined. Part I of the book deals with the analysis of slags and the determination of basic elements and usual impurities, and describes methods of determining rare-earth elements. Part II deals with the analysis of cast irons and steels and describes, the determination of usual components and tungsten and molybdenum. in the presence of niobium, as well as the determination of tantalum, niobium and cerium. Part III includes analysis of metallic chromium, niobium, titanium, nickel, and their alloys. Methods of determining cerium, indium, and gallium in metals and alloys are discussed along with the determination of rare-earth elements by applying the chromatographic method. Part IV deals with spectral analysis including photographic and other various methods. The following members of the Institute of Metallurgy participated in the work: A. A. Astanina, V. S. Nagibin, Ye. N. Kunenkova, Yu. I. Bykovskaya, L. I. Veselago, I. A. Golubeva, N. S. Gertseva, A. S. Stavitskiy, A. N. Shteyaberg, N. V. Nikitina, and L. L. Dapchinskaya.

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AM5016875

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TABLE OF CONTENT [Abridged]:

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AM5016875

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L 58716-65
AM5016873

SUB CODE: MM SUBMITTED: 19Jan65 NO REF SOV: 133

OTHER: 015 DATE ACQ: 03Jun65

Card 3/3 elp

L 3439-66 EWT(m)/EWP(t)/EWP(b) IJP(c) JD/JG/GS

ACCESSION NR: AT5023103 UR/0000/65/000/000/0295/0299 25 B+1

AUTHOR: Veselago, L. I. 55

TITLE: Determination of vanadium in multicomponent alloys 55 21

SOURCE: Problemy bol'shoy metallurgii i fizicheskoy khimii novykh splavov (Problems of large-scale metallurgy and physical chemistry of new alloys); k 100-letiyu so dnya rozhdeniya akademika M. A. Pavlova. Moscow, Izd-vo Nauka, 1965, 295-299

TOPIC TAGS: vanadium, titrimetry, oxygen, bromine compound

ABSTRACT: A new method for the titrimetric determination of vanadium in multicomponent alloys by means of oxidation with the aid of the oxygen of air is proposed, replacing the previously used, unwieldly method of oxidizing the unstable V^{2+} by means of Fe^{3+}. The oxidation of V^{2+} by the oxygen of air (aeration) greatly accelerates and simplifies the determination of V in the presence of Cr, particularly in Cr-containing ferrovanadium alloys. In addition, another variant of this method, using potassium bromate as the oxidizing agent, is proposed for the titrimetric determination of V without prior separation in alloys containing sig-

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L 31139-66

ACCESSION NR: AT5023103

nificant proportions of Cr, Mo, Fe, Mn and small amounts of Ti and Nb. In this case an 0.2-0.3 g suspension of the alloy is decomposed in 30-50 cc of HCl (1:1). The resulting solution is boiled down to 20 cc and diluted with distilled water to 50 cc. Thereupon 2 cc H_2SO_4 (1:1) and metallic cadmium are added and the solution is reduced with boiling for 5-10 min. The solution is then filtered into a 250 cc flask to separate Cd. 5 g $(NH_4)_2SO_4$ and 5 g $CdSO_4$ are added to the solution and stirred until complete dissolution of the salts, whereupon 2 g $KBrO_3$ is added. The flask is placed in a boiling bath and the vanadium is oxidized for 15 min. Thereupon bromine is driven off by boiling for 30 min. On cooling, 10 cc H_3PO_4 (sp.wt. 1.7) and 10 cc H_2SO_4 (sp.wt. 1.84) are added to the solution and it is titrated with Mohr's salt with 2-3 drops of 0.5% solution of sodium diphenylamine-sulfonate. The advantages of this method are as follows: it dispenses with the use of diphenylbenzidine as an indicator, as well as with the use of a fairly large amount of excess H_2SO_4 which must subsequently be neutralized with sodium acetate, thus greatly simplifying the procedure and reducing the consumption of reagents. Orig. art. has: 6 tables.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: MM, GC

NR REF SOV: 001 OTHER: 000

Card 2/2

VESELAGO, V.G.; PROKHOROV, A.M.

Microwave spectrum of HDSe. Zhur. eksp. i teor. fiz. 31 no.4:731 O '56. (MLRA 9:12)

1. Fizicheskiy institut imeni P. N. Lebedeva Akademii nauk SSSR. (Microwave spectroscopy) (Hydrogen selenide--Spectra) (Deuterium compounds--Spectra)

PRIKHOT'KO, A F

24(7) P 3 PHASE I BOOK EXPLOITATION SOV/1365

L'vov. Universytet

Materialy X Vsesoyuznogo soveshchaniya po spektroskopii. t. 1: Molekulyarnaya spektroskopiya (Papers of the 10th All-Union Conference on Spectroscopy. Vol. 1: Molecular Spectroscopy) [L'vov] Izd-vo L'vovskogo univ-ta, 1957. 499 p. 4,000 copies printed. (Series: Its: Pixychnyy zbirnyk, vyp. 3/8/)

Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po spektroskopii. Ed.: Gazer, S.L.; Tech. Ed.: Siranyuk, T.V.; Editorial Board: Lavistera, G.S., Academician (Resp. Ed., Deceased), Neporent, B.S., Doctor of Physical and Mathematical Sciences, Fabelinskiy, I.L., Doctor of Physical and Mathematical Sciences, Fabrikant, V.A., Doctor of Physical and Mathematical Sciences, Kornitskiy, V.G., Candidate of Technical Sciences, Rayskiy, S.M., Candidate of Physical and Mathematical Sciences, Klimovskiy, L.K., Candidate of Physical and Mathematical Sciences, Milyanchuk, V.S., Candidate of Physical and Mathematical Sciences, and Glauberman, A. Ye., Candidate of Physical and Mathematical Sciences.

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AVAILABLE: Library of Congress

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Card 30/30

Veselago, V.G.

109-4-13/20

AUTHOR: Veselago, V.G. and Irisova, N.A.

TITLE: A Modulation System for Stabilizing the Frequency of a Reflex Klystron by means of a Cavity Wavemeter. (Modulyatsionnaya skhema stabilizatsii chastoty otrazhatelnogo klistrona pri pomoshchi obyemnogo volnomera)

PERIODICAL: Radiotekhnika i Elektronika, 1957, Vol.2, No.4, pp. 484 - 487 (USSR).

ABSTRACT: The system described can be operated at a constant frequency or a variable frequency (a sweep generator). It consists of a klystron, a modulator operating at 900 kc/s, a waveguide section, a resonant 900 kc/s amplifier, a synchronous detector, a crystal detector and a cavity wavemeter (with a small motor revolving at 2 r.p.m.). Some of the power from the klystron is fed to the cavity resonator and a small signal (0.01 V) of 900 kc/s is applied to the reflector of the klystron which is thus frequency-modulated. If the klystron output signal lies within the pass-band of the cavity wavemeter, the crystal detector will pick up an amplitude-modulated (900 kc/s) signal, except when the klystron frequency is equal to the resonant frequency of the cavity. Output signal of the detector is applied to the synchronous detector (via the resonant amplifier) where it produces an "error signal". The "error" voltage

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109-4-13/20

A Modulation System for Stabilising the Frequency of a Reflex Klystron by means of a Cavity Wavemeter.

is applied to the reflector of the klystron and in this way its frequency is locked-in with the wavemeter. The motor is employed to tune the cavity wavemeter, so that its frequency will change periodically and thus re-tune the klystron. The tuning ranges (with a stable klystron frequency) of up to 60 Mc/s could be obtained without any mechanical adjustments of the klystron. The system had a stabilisation coefficient of about 100. A detailed circuit diagram of the synchronous detector (with amplifier) is given (Fig.5) and its operation is discussed in detail.
There are 6 figures (1 block schematic) and 4 references, of which 3 are Slavic.

SUBMITTED: August 6, 1956.

AVAILABLE: Library of Congress.

Card 2/2

51-2-12/15

AUTHORS: Zemskov, Ye. M. and Veselago, V.G.

TITLE: The Stark effect in the rotational spectra of the symmetrical-top molecules in the presence of a quadrupole bond (the $\mu\mathcal{E} \approx eQq$ case). (Shtark-effekt vo vrashchatel'nykh spektrakh molekul tipa asimmetrichnogo volchka pri nalichii kvadrupol'noy svyazi (sluchay $\mu\mathcal{E} \approx eQq$).

PERIODICAL: "Optika i Spektroskopiya" (Optics and Spectroscopy) 1957, Vol.3, No.2, pp.183-186 (U.S.S.R.)

ABSTRACT: Theoretical paper. The Stark splitting is used to study the rotational spectra of the asymmetrical-top molecules. If such a molecule contains an atom whose nucleus possesses a quadrupole moment the rotational spectrum becomes very complex. The theory of the simultaneous Stark and quadrupole interaction in rotational spectra was given in /1, 2/ only for the case when one of these interactions is much larger than the other. This paper deals with the case when both interactions are of the same order, i.e. $\mu\mathcal{E} \approx eQq$. The total Hamiltonian is taken to be $H = H_0 + H_S + H_Q$, where H_0, H_S, H_Q are the Hamiltonians of a free rotating molecule, the Stark interaction and the quadrupole interaction respectively. It is assumed that $(H_S + H_Q) \ll H_0$. The case of $J = 1$ is treated in more detail and the relative intensities of the sub-levels for the $J = 0 \rightarrow J = 1$ are given. There are three

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51-2-12/15

The Stark effect in the rotational spectra of the asymmetrical-top molecules in the presence of a quadrupole bond (the $\mu\mathcal{E} \approx eQq$ case). (Cont.)

references (two Slavic). References quoted in abstract: 1, 2.

SUBMITTED: March 7, 1957.
ASSOCIATION: P.N.Lebedev Physics Institute, Academy of Sciences of the U.S.S.R.
AVAILABLE: Library of Congress

Card 2/2

AUTHOR: VESELAGO,V.G. PA - 2991

TITLE: The Dipole Moment of the HDSe Molecule. (Dipol nyy moment molekuly HDSe, Russian)

PERIODICAL: Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol 32, Nr 3, pp 620-620 (U.S.S.R.)

Received: 6 / 1957 Reviewed: 7 / 1957

ABSTRACT: The dipole moment of D_2Se was determined by W.A.JACHE et al. (Journ.Chem.Phys.25, 209, 1956) by the intense splitting up of the lines of the rotation vibration spectrum. For purposes of control the author determined the dipole moment of the HDSe molecule and based his investigation on the microwave spectrum of this molecule. For this purpose the intense splitting up of four lines: 220-221, 431-432, 954-955, and 743-744 was investigated. In order to eliminate the error committed by the inaccuracy of the determination of the field strength in the wave conductor, the intense splitting at HDO was additionally measured and the required dipole moment was computed immediately by means of the HDO moments given by M.W.STRANSBERG (Journ.Chem.Phys.). The result, 0,62 Debye, is in sharp contradiction to the value found by A.W.JACHE et al. (0,24 Debye). (1 Table)

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Physics Inst im P.N. Lebedev, Acad Sci USSR

Card

VESELAGO, V. G.: Master Phys-Math Sci (diss) -- "Investigation of the molecule of HDSe by the radiospectroscopic method". Moscow, 1958. 8 pp (Acad Sci USSR, Physics Inst im P. N. Lebedev), 150 copies (KL, No 5, 1959, 142)

AUTHOR: Veselago, V. G. SOV/48-22-9-79/40

TITLE: Determination of the Structure of the HDSe Molecule According to Its Microwave Rotation Spectrum (Opredeleniye struktury molekuly HDSe iz yeye vrashchatel'nogo mikrovolnovogo spektra)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1958, Vol 22, Nr 9, pp 1150 - 1153 (USSR)

ABSTRACT: This is an investigation of the rotation spectrum in question by means of a radiospectroscope with an electric molecular modulation. The measurements were all carried out at the temperature of dry ice and at a pressure of $\sim 10^{-2}$ torr. The frequency of the absorption lines was determined by means of a quartz frequency multiplier. It was controlled from the PB-71 station which operates on a frequency of 200 kc. 10 transitions were found in the range of 8000 $\div$ 43000 Mc(Table 1). Apart from the measurement of the line frequency the magnitude of the Stark-(Shtark) effect (Ref 1) was determined, in order to find the dipole moment of the HDSe molecule.

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The value of 0,62 Debye found in this investigation is at variance with that presented in reference 2. If, however, the curve describing the dependence of the ionic character of the binding upon the nature of the electronegative atoms constituting this binding (Ref 3) the value found well agrees with theory. As the structure of the HDSe molecule is only dependent upon two parameters, the lengths of the bond $r_{Se-H} = r_{Se-D} = r$ and the angle of valence between H-Se-D it is sufficient to know the frequencies of only two transitions. Nevertheless the correction connected with the existence of a centrifugal disturbance (Ref 5) must be taken into account in the computation. The hypothesis of an unequal effective length of the bonds Se-H and Se-D permits directly to solve the problem under consideration. The following values for the structural parameters are found

$r_{Se-D} = 1,446 \pm 0,001$ Å, $r_{Se-H} = 1,452 \pm 0,001$ Å,

Determination of the Structure of the HDSe Molecule SOV/48-22-9-39/40
According to Its Microwave Rotation Spectrum

$$\frac{r_{Se-H}}{r_{Se-D}} = 1{,}004 \pm 0{,}001 \text{ Å}, \quad \varphi = 90^{\circ}.$$

The author expresses his gratitude to A.M.Prokhorov for supervising the work and to V.V.Kobelev for his assistance in the computations at the electronic computer BESM. There are 3 tables and 8 references, 2 of which are Soviet.

ASSOCIATION: Fizicheskiy institut P.N.Lebedeva Akademii nauk SSSR (Institute of Physics imeni P.N.Lebedev, AS USSR)

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24(7)

AUTHOR: Veselago, V.G. SOV/51-6-4-7/29

TITLE: Determination of the Structure and the Dipole Moment of the HDSe Molecule from Its Microwave Spectrum (Opredeleniye struktury i dipol'nogo momenta molekuly HDSe iz yeye mikrovolnovogo spektra)

PERIODICAL: Optika i Spektroskopiya, 1959, Vol 6, Nr 4, pp 450-456 (USSR)

ABSTRACT: The spectra of hydrogen selenide (H_2Se) and its deutero-derivatives D_2Se and HDSe were studied by many authors (Refs 1-4). In all these papers the hydrogen selenide molecular structure was derived, but the results vary from author to author because they have neglected the centrifugal perturbation. To determine the structure of hydrogen selenide with the centrifugal perturbation taken into account, the author uses the spectrum of HDSe in the centimetre region. This spectrum was obtained by means of a radio-spectroscope of the usual type with electric molecular modulation. Ten pure-rotation transitions were observed in the region 8000-44000 M/cs. Frequencies of these transitions are given in Table 1 for $HDSe^{82}$, $HDSe^{80}$, $HDSe^{78}$, $HDSe^{77}$ and $HDSe^{76}$. To determine the dipole moment of the HDSe molecule, splitting of lines in a constant electric field (Ref 11) was measured.

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Determination of the Structure and the Dipole Moment of the HDSe Molecule from Its Microwave Spectrum

The dipole moment was found to be equal to 0.62 debye. The rotational constants of the HDSe molecule were calculated taking into account the centrifugal perturbation (the rigid asymmetrical top approximation gave inaccurate results). For the transitions observed the frequency (Eq 3) is a function of seven unknowns: the asymmetry parameter $K = (2B - A - C)/(A - C)$, the quantity $U = (A - C)/2$ (where A, B and C are the rotational constants) and five centrifugal perturbation constants D_{Jk}, D_k, δ_J, R_5 and R_6. All the other symbols in Eq 3 have the same meaning as those of Posener and Strandberg (Ref 5). Two methods were used to find the seven unknowns. In the first method a system of seven equations was solved using the data derived from seven lines; in the second method ten equations and data from ten lines were used. The rotational constants found by these two methods are given in Tables 3 and 4 respectively. From the rotational constants and other data the structure of the HDSe molecule was determined. This molecule is a triangle (cf. a figure on p 454) with bond lengths Se-H and Se-D of 1.452 and 1.446 Å respectively; the angle H-Se-D is $90°17' \pm 50'$. The structures of the HDO and HDS molecules were also determined using spectra obtained earlier. The HDS structure is given by

Determination of the Structure and the Dipole Moment of the HDSe Molecule from Its Microwave Spectrum

r(S-H) = 1.3283 Å, r(S-D) = 1.3215 Å and the angle H-S-D is 92°6'. For HDO the following structural constants were deduced: r(O-H) = 0.9458 Å, r(O-D) = 0.9405 Å and the angle H-O-D is 104°27'.
Acknowledgment is made to A.M. Prokhorov who directed this work.
There are 1 figure, 7 tables and 19 references, 5 of which are Soviet, 12 English, 1 translation from English into Russian and 1 German.

SUBMITTED April 18, 1958

Card 3/3

22200

S/109/61/006/005/027/027
D201/D303

X4,6520

AUTHOR: Veselago, V.G.

TITLE: Spin generator

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 5, 1961, 849 - 851

TEXT: The present article describes a spin generator constructed by the author. The bloc-diagram is given in Fig. 1. The coil with the sample - 2 is placed in the field of a constant magnet 1 having H = 5000 oersted. The magnitude of the field can be varied by the additional magnetizing coils 5. The frequency of precession of protons in the field H is about 20,3 mc/s. The coil together with the sample is part of a twin - T bridge 3. The output from the bridge is applied through a 20.3 mc/s resonance amplifier 4 to its own input. The overall frequency characteristics are given in Fig. 2, the central narrow peak ± 100 c/s, corresponds to the unbalance

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of the bridge due to the nuclear magnetic resonance in the sample, while the wide additional peaks are due to the non-ideal balancing of the bridge over a wide frequency band. Since the twin-T, bridge network normally used (Ref. 7: H.L. Anderson, Phys. Rev., 1949, 76, 1460) has a very narrow pass-band, the bridge as shown in Fig. 3 was used (Ref. 8: G.E. Peake, J. Chem. Phys., 1948, 16, 327). The balance of this bridge is obtained by adjusting capacitors C_1 and C_2. The bridge attenuates the resonant frequency by about 80 %. The amplifier used was a modified receiver KBM (KVM) tuned to 20.3 mc/s. The voltage from the ПЧ (PCh) jacks is applied to a special balanced mixer, to which is also applied the voltage from the local oscillator of the receiver KBM (KVM). As a result there is a signal of the same frequency as at the input of the receiver, i.e. 20.3 mc/s. The pass-band of the receiver is ± 3 kc/s and the overall amplification, as required for the operation of a spin generator, is about 10^3. The generator frequency is measured by a heterodyne wave meter. In order to start the generator the bridge is tu-

S/109/61/006/005/027/027
D201/D303

Spin generator

ned to the maximum attenuation of the signal at 20.3 mc/s, the field being changed away from the resonance value. The field is then reestablished equal to its value at resonance, the gain of the amplifier being at the same time increased until generation occurs. The amplitude of oscillations is about 0.01 volt. The signal-to-wire ratio better than 10, the frequency of oscillations is proportional to the magnetic field and 'follows' it within the limits of ± 500 c/s. Detuning the receiver by 2 -3 kc/s produces a change in the generator frequency of only about 20 - 25 c/s. If it is required for the generator to follow the changes in the magnetic field in a larger frequency range it is necessary to use a bridge having a wider pass-band. The author acknowledges the help of A.M. Prokhorov and of K.V. Vladimirskiy, the co-operation of Yu.V. Kosichkin, a student at MGU in measuring the characteristics of the spin generator, and the help of M.S. Matyayev and L.V. Zav'-yalov in assembling the installation. There are 3 figures and 8 references: 3 Soviet-bloc and 5 non-Soviet-bloc. The references to

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Spin generator

the 3 English-language publications read as follows: O. Schmelzer, Lectures on the theory and design of an alternating gradient proton synchrotron, Geneva, 1953; H.L. Anderson, Phys.Rev., 1949, 76, 1460; G.E. Pake, J. Chem. Phys., 1948, 16, 327.

ASSOCIATION: Fizicheskiy institut im. P.N. Lebedeva AN SSSR (Institute of Physics im. P.N. Lebedev, AS USSR)

SUBMITTED: November 21, 1960

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ACC NR: AP6033545 SOURCE CODE: UR/0181/66/008/010/2862/2866

AUTHOR: Veselago, V. G.; Rudashevskiy, Ye. G.

ORG: Physics Institute im. P. N. Lebedev, AN SSSR, Moscow (Fizicheskiy institut AN SSSR)

TITLE: Amplification of electromagnetic waves in ferromagnets possessing electric conductivity

SOURCE: Fizika tverdogo tela, v. 8, no. 10, 1966, 2862-2866

TOPIC TAGS: solid state plasma, plasma oscillation, plasma wave propagation, spin wave, ferromagnetic material, current carrier, electromagnetic wave, electric conduction

ABSTRACT: The authors propose to increase the amplification of electromagnetic plasma oscillations in a solid state by reducing the carrier drift and thereby reduce the heat dissipation. To this end, an analysis is made of the plasma wave propagation in ferromagnets having electric conductivity, in which coupled magnetoplasma and spin waves can propagate. The dispersion equation is written out for classical conducting ferromagnets of the iron-nickel type, with allowance for the carrier drift and damping. It is assumed that a circularly-polarized transverse plane wave propagates in the solid-state plasma. The dispersion equation for the coupled waves is written out and solved graphically, and the wave deceleration and the damping are calculated from it. The results show that the greatest amplification can be expected in ferromagnets with a single type of carrier. A plasma in a ferromagnet with two types of oppositely

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ACC NR: AP6033545

charged carriers of equal concentration can be absolutely unstable in the case of small wave numbers. Ferromagnets with unequal number of oppositely charged carriers will have the same properties as those with a single type of carrier. Orig. art. has: 1 figure and 15 formulas.

SUB CODE: 20/ SUBM DATE: 03Feb66/ ORIG REF: 002/ OTH REF: 006

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ACC NR: AP7005844 SOURCE CODE: UR/0181/66/008/012/3571/3573

AUTHOR: Veselago, V. G.

ORG: Physics Institute im. P. N. Lebedev, AN SSSR, Moscow (Fizicheskiy institut AN SSSR)

TITLE: On the properties of substances with simultaneously negative values of the dielectric constant and magnetic permeability

SOURCE: Fizika tverdogo tela, v. 8, no. 12, 1966, 3571-3573

TOPIC TAGS: synthetic material, optic material, ferromagnetic material, dielectric constant, magnetic permeability, dispersion equation, electromagnetic wave propagation

ABSTRACT: In view of the increasing interest in conducting ferromagnets which possess simultaneously plasma and ferromagnetic properties, for which the dispersion equation indicates the existence of spectral regions in which the dielectric constant and the magnetic permeability are simultaneously negative, the author shows that in such substances the propagation of electromagnetic waves will differ from the propagation in ordinary substances. Among the main differences is that the vectors E, H, and k form a left-hand system, whereas the Poynting vector forms with E and H a right-hand system. Consequently, the phase and group velocities have opposite directions. Other features are a negative Doppler effect, an obtuse Cerenkov angle, unusual dissipation properties, and a negative refractive index. Optical systems made up of such

ACC NR: AP7005844

materials can possess unusual light transmitting abilities. Orig. art. has: 2 figures and 9 formulas.

SUB CODE: 20/ SUBM DATE: 17May66/ ORIG REF: 004/ OTH REF: 003

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ACC NR: AP7011022 SOURCE CODE: UR/0053/66/089/003/0520/0525

AUTHOR: Barchukov, A. I.; Basov, N. G.; Bunkin, F. V.; Vesolago, V. G.; Irisova, N. A.; Karlov, N. V.; Manenkov, A. A.

ORG: none

TITLE: Aleksandr Mikhalovich Prokhorov

SOURCE: Uspekhi fizicheskikh nauk, v. 89, no. 3, 1966, 520-525

TOPIC TAGS: physics personnel, radio wave propagation, maser, quantum generator, academic personnel

ABSTRACT:

Aleksandr Mikhaylovich Prokhorov is one of the leading Soviet physicists, a corresponding member of the Academy of Sciences USSR, and a winner of the Lenin and Nobel prizes. He is associated with the development of quantum radiophysics and belongs to the widely known school of academicians L. I. Mandel'shtam and N. D. Papaleksi. Prokhorov has successfully combined physical investigations with the development of working devices employing new physical principles and phenomena.

Prokhorov was born on 11 July 1916 in Atherton, Australia. His father was a political refugee who had migrated to Australia in 1911. The family returned to Russia in 1923. In 1939 Prokhorov graduated with honors from the Physics Department of Leningrad University and entered the Oscillations Laboratory of the Physics Institute imeni P. N. Lebedev for postgraduate work. Prokhorov was in the army from 1941 until 1944, when after being

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wounded for the second time he was released. Prokhorov's scientific activity began in 1939 under the guidance of M. A. Leontovich and V. V. Migulin with the study of radiowave propagation along the earth's surface. From this study Prokhorov and Migulin developed an original way to observe the ionosphere by means of the radio interference method. In 1944 Prokhorov investigated the frequency stabilization of tube oscillators in the Oscillations Laboratory of the Lebedev Physics Institute. His first dissertation work was accomplished under the guidance of S. M. Rytov and was devoted to the theory of nonlinear oscillations. Prokhorov, Rytov, and M. Ye. Zhabotinskiy received the Mandel'shtam Prize for the development of the theory of frequency stabilization.

After defending his dissertation, Prokhorov proceeded with his work in radiophysics. In 1948 he began a study of coherent radiation in a synchrotron. From this investigation Prokhorov developed a method for determining the size of electron bunches and showed experimentally that a synchrotron generates coherent radiation in the centimeter range. He presented his results in the form of a doctoral thesis, which he defended successfully in 1951.

ACC NR: AP7011022

Simultaneously with his work in accelerator physics, Prokhorov, at the invitation of academician D. V. Skobel'tsyn, began working in the field of radiospectroscopy. Prokhorov's interest in radiospectroscopy was encouraged by the fact that well developed methods of radiolocation and radioengineering were being employed at that time. These methods were soon to find application in the new field of radiophysics, principally in the spectroscopy of the rotational and vibrational spectra of molecules. Besides investigating purely spectroscopic problems, Prokhorov also studied the employment of the absorption spectra in the uhf range for the construction of frequency and time standards. As a result of theoretical examinations of ways to raise the stability of molecular frequency and time standards, Prokhorov together with N. G. Basov wrote a series of classical works on the development of masers. It was at this point that Prokhorov became one of the founders of quantum electronics.

Prokhorov and Basov soon offered a new method for obtaining a system with negative temperature, the so-called "three levels method," which later became the basic method for developing paramagnetic as well as optical quantum generators and amplifiers. During the period from 1955 to 1960, Prokhorov concentrated on the development of quantum paramagnetic amplifiers in the uhf range, giving special attention to new crystals for

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